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Second Consultation Meeting on the
Iron and Steel Industry

New Delhi, India, 15-19 January 1979

REPORT OF THE PREPARATORY EXPERT GROUP ON TRAINING*

Vienna, 9 - 11 January 1978

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..... 1. The list of participants is attached.

2. Mr. Nijhawan, Chairman of the Iron and Steel Task Force, opened the meeting and introduced the participants, including Mr. W. L. Hewlett, the Co-ordinator of the Group.

..... 3. The meeting adopted the attached agenda.

4. The meeting considered the note "Manpower requirements 1975-1985-2000 Iron and Steel Industry" which had been prepared by the Training Section of UNIDO and circulated to participants.

5. In a discussion of the current manning levels in the steel industry in developing countries the following main points were made:

(a) In this context "developing countries"meant those so classified at the present time, irrespective of the status to which they might attain by the year 2000.

(b) Any statistics or estimates of manpower in the steel industry would need to be appropriately qualified for a variety of reasons. There were differences in coverage of quoted figures, some including and some excluding ore and coal mining, maintenance, other service operations, and engineering fabrication activities. Some countries faced with problems of high unemployment retained more men in the steel industry than could be justified on a basis of strict necessity. Other countries justified a high ratio of workers to steel capacity by the need to train men for new green field plants. Different countries had different levels of infrastructure which reflected on the facilities to be provided by steel plants.

6. With these qualifications in mind it was agreed to adopt a figure of 250 tons per man year as a notional figure for the calculations of future manpower in the steel industries in developing countries, the figure being assumed to cover all operations in the steel works itself from ore preparation to finished steel rolling, and including maintenance and services, but excluding ore and coal mining. The figure of 250 tons represented the manning level for a modern large-scale blast furnace/oxygen steelmaking plant, and had been established recently at new plants in Brazil and Korea. Manpower calculations referring specifically to plants operating other technological processes would need to be made separately.

7. The estimate of 250 tons per man year was taken as an average for all developing countries to be reached some time during the next 25 years. It represented a substantial increase over the current level, although there were many difficulties in measuring the current level from published statistics.

8. The educational categories of the manpower within the total requirements were estimated as follows. The dividing line between the categories would vary from country to country depending on the local educational systems:

. University graduates of all appropriate disciplines (e.g. sciences, technology, economics, law, commerce, management)	7 %
. School leavers with a good high school education plus some education in e.g. sciences or commerce	
(a) for technicians	12 %
(b) for administrative personnel	10 %
. School leavers with a good secondary education plus some technical craft training	40 %
. Primary education	31 %
	100 %

9. After a full discussion of the relation between requirements of trained manpower for the steel industry and for balanced industrial development it was estimated that about 10 % of a country's total industrial manpower in the first two categories above would be required in the steel industry. It would be borne in mind that the actual figure was hard to measure and varied greatly from country to country.

10. In a discussion of the wastage rates causing loss of manpower from the steel industry and from industry generally, it was agreed that from the total industrial labour force in a developing country the loss would be practically limited to deaths and retirements, or about 2 % a year. Wastage from the steel industry itself including leaving for better prospects ranged from 3 % to 10 % a year or even higher in different countries. For the eventual purpose of calculating steel industry training requirements an intermediate estimate of 5 % loss a year from all causes would be normally acceptable.

11. On the basis of the estimates and assumptions in the foregoing paragraphs a table was prepared showing the implied educational requirements of manpower in the steel industries in developing countries in 1985 and 2000. It was recognized that there were many factors affecting the estimates which could not yet be reflected quantitatively in the calculations. In particular

(a) the manpower needed for steel plant construction should be taken into account and shown separately with as much detail as could be obtained;

(b) the figures for the year 2000 were important as a measure of the training problems but the figures for 1985 would be relatively less significant because the year was so close and the assumed productivity figure was unlikely to be reached by then;

(c) alternative illustrative estimates should be prepared for the manpower requirements to match steel production growth rates different from that represented by an output of 500 million tons in developing countries in 2000.

12. It seemed possible that the future educational requirements for steel industry manpower could be met from facilities expected to be available. However it would be necessary to provide UNESCO with some regional or country analysis of the figures before firm comments could be made. In the final analysis each country would need to solve its own educational problems including the use where necessary of facilities in developed countries.

13. A further table was prepared showing the numbers of persons needing training in the steel industry in 1985 and 2000. In discussion it was pointed out that

(a) where developed countries were providing assistance in establishing steel plants in developing countries it was usual for a substantial number of the higher management staff to be trained in the donor country for extended periods;

(b) the training of craftsmen and operators was best done on the plant where they would work with the help of vocational training centres;

(c) each new project should have an appropriate training programme as an integral part of the project itself. It should take account of the facilities to be used for the initial programme and for all subsequent needs;

(d) there was a continuing need for training an existing workforce at all levels through refresher and other evening or part-time courses;

(e) the steel industry should create and control its own facilities for most of its continuing training needs, including possibly central schools for craftsmen and process workers, together with regional training institutes for management, higher technical training, and maintenance control and procedures.

14. UNIDO should assist developing countries on request to estimate training needs, review the physical and other facilities available, and assess the expansion needed.

Consultation Meetings on the Iron and Steel Industry

PREPARATORY EXPERT GROUP ON TRAINING

Vienna, 9 - 11 January 1978

LIST OF PARTICIPANTS

Mr. S. N. ACHARYA, Joint Secretary, Department of Iron and Steel
Ministry of Steel and Mines
Udyog Bhawan, New Delhi, India

Mr. Meyer BERNSTEIN, Executive Secretary, Labor Advisory Committees
to the Multilateral Trade Negotiations
Office of Foreign Economic Policy, Room S5319
New Department of Labor Building, Washington D.C.20210, USA

Mr. Y. KAWAMURA, Senior Assistant to General Manager,
Plant Engineering Business Department
Nippon Steel Corporation, 2-6-3
Otemachi, Chimoda-Ku, Tokyo, Japan

Mr. C. N. SUCRE
United Nations Educational, Scientific and Cultural Organization
(UNESCO) - 7, place de Fontenoy
75700 - Paris, France

-:-

UNIDO Staff attending:

Mr. A. Hacini, Acting Head, Negotiations Section

Mr. B. R. Nijhawan, Chairman, Task Force on the Iron and Steel Industry

Mr. B. Blaszczyszyn, Negotiations Section

Mr. J. P. Dee, Training Section

Mr. W. L. Hewlett, Negotiations Section

Mr. K. Yamaguchi, Metallurgical Industries Section

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AGENDA

1. Introductory Statement by Mr. Nijhawan, Chairman of the Task Force

2. Introductory Statement by the Co-ordinator

3. Revision of current manning levels in the steel industry in developing countries and future trends up to the year 2000 as estimated in the note dated 1 December 1977 prepared by the UNIDO Training Section

4. Relationship between the needs of trained manpower in the steel industry and the needs for balanced industrial development in developing countries

5. Relationship between the total needs of trained manpower and the general educational facilities likely to be available to developing countries

6. Assessment of the industrial training requirements for manpower in the steel industries of developing countries

7. Proposals for action

MANPOWER REQUIREMENTS IN THE STEEL INDUSTRIES OF DEVELOPING COUNTRIES*

Year	1985	2000
Steel production target	165 million tons	500 million tons
Estimated numbers employed in the steel industries in the year	660,000	2 million
Recruitment needed during the year for expansion	66,000	200,000
Recruitment needed during the year including allowance for loss	79,000	240,000
of which .Graduates	5,500	17,000
.19 year olds	17,500	53,000
.16 year olds	32,000	96,000

DEVELOPING COUNTRIES' STEEL INDUSTRIES' OWN TRAINING NEEDS

	Thousands needing training in the year: 1985		2000	
Graduates for technical and management training	5.5		17	
Including allowance for loss		8.8		24
19 year olds for technical training	9.5		29	
Including allowance for loss		13.5		41
19 year olds for commercial training	8		24	
Including allowance for loss		11		34
16 year olds for craftsman and process training	32		96	
Including allowance for loss		45		136
Total		78		235

* This table is based on the assumptions in paragraphs 6, 8, and 10 of the Report.